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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|-------------------------|
| 10/070,000 | 11/27/2002 | Jung-Chih Hu | MERCK 2395 | 5769 |
| 23599 | 7590 | 10/07/2003 | | EXAMINER |
| MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201 | | | | WONG, EDNA |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1753 | |
| | | | | DATE MAILED: 10/07/2003 |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/070,000 | HU ET AL. | |
| | Examiner Edna Wong | Art Unit 1753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-3 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 1-3 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8</u> . | 6) <input type="checkbox"/> Other: _____ |

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Applicants' specification discloses that Fig. 1 is a typical deposition profile in plating (page 27, line 4).

Specification

The disclosure is objected to because of the following informalities:

page 4, line 19, the word "a" should be deleted.

page 5, line 16, the word "is" should be deleted.

page 6, line 14, the word "instaneous" should be amended to the word -- instantaneous --.

page 7, line 1, the word "groups" should be amended to the word -- groups --.

page 7, line 1, the word "acetythiourea" should be amended to the word -- acetylthiourea --.

page 7, line 4, the word "agent" should be amended to the word -- agents --.

page 7, line 5, the word "electrodepositioon" should be amended to the word --
electrodeposition --.

page 8, line 16, the word "reveres" should be amended to the word -- reverses --.

page 11, line 12, "PVD" should be amended to -- PVD --.

page 16, line 20, the word "bot" should be amended to the word -- not --.

page 17, line 3, the word "surface" should be amended to the word -- surface --.

page 17, line 18, it is unclear what is meant by "could make surface more
roughness".

page 18, lines 4-6, 10, 12, 14 and 20, the word "Thiourea" should be amended to
the word -- thiourea --.

page 20, lines 2-4, 9 and 13, the word "Thiourea" should be amended to the word
-- thiourea --.

page 20, line 4, the word "is" (first occurrence) should be amended to the word --
are --.

page 20, line 10, the word "found" should be amended to the word -- find --.

page 20, line 13, "length with Thiourea" should be amended to -- length with
Thiourea --.

page 21, line 2, the word "Thiourea" should be amended to the word -- thiourea --

page 21, line 7, the word "Molasses" should be amended to the word -- molasses

--.

page 21, line 12, the word "Glucose" should be amended to the word -- glucose -

-.

page 24, line 3, the word "Tribenzylamine" should be amended to the word --
tribenzylamine --.

page 24, line 5, the word "bands" should be amended to the word -- bonds --.

page 24, line 8, the word "Tribenzylamine" should be amended to the word --
tribenzylamine --.

page 28, lines 1, 4, 17, 20, 23, 29, 31, 33 and 35, "A/dm2" should be amended to
-- A/dm² --.

page 28, line 6, there is no Fig. 8.

page 28, line 13, there is no Fig. 11.

page 28, line 13, the second ". " (period) should be deleted.

page 28, line 24, there is no Fig. 16.

page 28, line 34, "(" should be amended to -- (--.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the

specification.

Claim Objections

Claims 1-3 are objected to because of the following informalities:

Claim 1

line 2, the word "Polyethylenglycol" should be amended to the words --
polyethylene glycol --.

line 3, it is suggested that the words "if necessary" be amended to the word --
optionally --.

Claim 2

line 1, it is suggested that the word "Solution" be amended to the words -- The
solution --.

Claim 3

line 1, it is suggested that the word "Solution" be amended to the words -- The
solution --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 1, it is unclear what is meant by the word "Electroplatingplating". It is suggested that that the word be amended to -- Electroplating --.

line 2, the words "(molecular weight >200)" are indefinite.

lines 3-4, it is unclear what the "further additives" are. Also, what were the original additives?

Claim 2

line 1, the word "comprising" is not further limiting the parent claim. Claim 1, line 1, already recites "comprising". Thus, claim 2 has to be -- further comprising --.

line 1, it appears that the Cl ions are coming from the HCl recited in claim 1, line 2. However, it is unclear if they are. If they are not, then there are both HCl and Cl ions in the solution as presently claimed.

line 2, it appears that the "hydroxyl amine sulfate" is the same as that recited in claim 1, lines 2-3. However, it is unclear if it is. If it is, then it is suggested that the word - - said -- be inserted after the word "and".

Claim 3

line 1, the word "comprising" is not further limiting the parent claim. Claim 1, line 1, already recites "comprising". Thus, claim 3 has to be -- further comprising --.

line 1, it appears that the Cl ions are coming from the HCl recited in claim 1, line 2. However, it is unclear if they are. If they are not, then there are both HCl and Cl ions in the solution as presently claimed.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-3 define over the prior art of record because the prior art does not teach or suggest an electroplating solution for copper comprising $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, H_2SO_4 , HCl, Polyethyleneglycol (molecular weight >200), hydroxyl amine sulfate, hydroxyl amine chloride and if necessary further additives.

The prior art does not contain any language that teaches or suggests the above. *Mizumoto et al.* teaches determining formaldehyde in an electroless copper plating

solution by potentiometric titration with a standard NH₂OH · HCl solution (abstract).

Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a *prima facie* case of obviousness cannot be established.

Claims 1-3 would be allowable if rewritten or amended to overcome the claim objections and rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Citation

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mizumoto et al. ("Determination of Formaldehyde in Electroless Copper Plating Solution by Potentiometric Titration", *Hyomen Gijutsu* (no month, 1990), Vol. 41, No. 4, pp. 412-416) is cited to teach determining formaldehyde in an electroless copper plating solution by potentiometric titration with a standard NH₂OH · HCl solution (abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

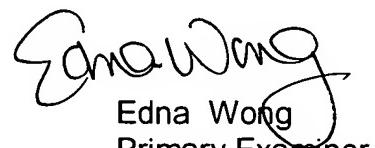
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number

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for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.



Edna Wong
Primary Examiner
Art Unit 1753

EW
October 2, 2003